AMSAT

NEWSLETTER

Issued by the Radio Amateur Satellite Corporation, P.O. Box 27, Washington, D. C. 20044

Volume I, Number 1 June 1969

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- Secretary: Charles Dorian DOT
- Treasurer: R.W. Mostow "Forecast FM" Magazine
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- Editor, Newsletter: S. H. Durrani Comsat Labs.

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SEP 1969

Editorial

INTRODUCING THE NEWSLETTER

With this, the first issue of the AMSAT Newsletter, we are embarking on a new project to keep the membership informed of what is going on in AMSAT. Actually, this is not quite the first issue, because an embryonic newsletter was issued in May by Geørge Kinal, our Engineering Vice President, in the form of a one-page progress report. In it he described the current AMSAT efforts to prepare the ham satellite Australis-Oscar A for launch, and AMSAT's decision to participate in Project "Moonray," which aims at placing a ham relay package on the moon.

These are exciting activities — Oscar and Moonray and amateur space communications in general — and AMSAT is deeply interested in them. As our membership expands and our involvement in various projects grows, so does the need for a newsletter increase.

The main objectives of the Newsletter are to document AMSAT activities and to report the progress on current projects. In addition, the Newsletter will carry special articles deemed to be of interest to the members. In the beginning, these articles will be mainly concerned with Australis-OSCAR, (which is our most important activity at present) or with providing information to new members for their orientation. Later issues will cover a wider field—as wide as the members wish it to be and make it to be.

Did you wonder "why a newsletter?" Well, now you know! And if you wondered what AMSAT is all about, and who is responsible for what, we have the answers in this issue. But there must be several other questions that you'd like to discuss. So we'll have a Reader's Column in future issues, which will give you a chance to air your views and propagate them out to fellow members. We'll be happy to hear from you, whether it is a matter of gravity or levity! Please direct your transmissions to Newsletter Editor, AMSAT, Box 27, Washington, D. C. 20044.

S. H. Durrani
Editor

P.S. How about a proper name for the Newsletter? We have considered the BEACON, TRANSMITTER, TRANSCEIVER, TRANSPONDER, UPLINK, and some others. But before settling on one, your Board of Directors decided to ask for suggestions from members. If you have any ideas on the subject, please pass them on to the Editor. (Hint: ask your wife to help us name this baby!)

FROM THE PRESIDENT'S DESK

The Australis-OSCAR A satellite, which was delivered to AMSAT on April 14, is currently undergoing a series of tests by AMSAT members at the NASA Goddard Space Flight Center. Jan King, K8VTR, who has been designated AMSAT's Australis-OSCAR A Project Manager, has been doing a superb job of coordinating all activities involving the satellite hardware, including the test program.

Australis-OSCAR A is an Australian-built satellite containing two and ten-meter beacon transmitters. While the previous four OSCAR satellites were launched by the Air Force, AMSAT has been discussing with NASA the possibility of placing Australis-OSCAR A in the second stage of a two-stage Thor-Delta vehicle along with another satellite. Details on the design and operation of the satellite are described in the July and August 1969 issues of QST. Be listening to W1AW for late bulletins as the launch date approaches, and in the meantime, be sure you have your equipment ready for receiving the satellite's beacons on 144.050 and 29.450 MHz. At least 10 dB of antenna gain is recommended to receive the 2-meter transmissions, but a dipole should be sufficient for 10 meters.

Response to the introductory AMSAT article in the June 1969 QST has been very good and AMSAT membership has already passed the one-hundred mark.

We are pleased to announce the receipt of a $150 donation from Project OSCAR to assist with the expenses of Australis OSCAR A. We are also pleased to announce the election of Captain Charles Dorian, W3JPT, to the Office of Secretary by the AMSAT Board of Directors on June 19. Chuck will replace Jim Puglise, W3CBJ, who in preparing to leave the Washington area feels he does not have the time to handle the responsibility competently. We wish to thank Jim for his significant contributions to AMSAT from its inception in January.

One of AMSAT's more recent members, Reginald Atkins (C/O NASA Tracking Station, Dan Dan, Guam 96910, USA), is interested in seeing a synchronous satellite repeater constructed for the 1296 MHz amateur band and has offered to assist with the project. Anyone interested in undertaking this project, please contact us.

Perry Klein K3JTE

SECRETARY'S COLUMN

Our general membership meeting of May 27, held at NASA's Goddard Space Flight Center,was one of the most interesting yet. The turnout was outstanding and we were fortunate enough to have Bill Orr from Project OSCAR and Bill Dunkerley from League headquarters as our honored guests.

Jan King gave a very informative and complete technical briefing on the progress with Australis-OSCAR A testing and Bill Orr spoke about the experience of our colleagues on the West Coast. Jan's talk is treated in his section of this Newsletter but Bill's comments deserve discussion and serious consideration by the membership.

Bill began by explaining that there are three important and separate but related phases in any amateur launch. First, design and fabrication. Second, testing and launch. Third, post-launch dissemination of information and collection of data. The problems encountered in the first two phases are easy to anticipate but Bill emphasized that your problems have only begun when the spacecraft achieves orbit. At this point the problems of generating accurate orbital predictions and getting this information out for use become very critical.

Bill went on to outline several criteria which any amateur spacecraft should meet. First, be certain to obtain all necessary engineering waivers from the FCC and the launching government agency well in advance of the launch. The Government regulatory agencies involved have granted all necessary waivers for OSCAR efforts but they have established certain groundrules which must be met, such as being able to turn the transmitters in the satellites off under certain conditions. Certain waivers must also be obtained by the command stations. Second, care must be taken to fabricate the satellite in such a way that it can withstand the strain of the launch phase. Not only can a structural failure in launch phase destroy the amateur satellite, it can be catastrophic for the entire mission. Third, the spacecraft should be thoroughly tested for RFI and should not generate any RF which could in any way compromise or interfere with the primary mission.

Bill then focused his attention on the more general problem of the entire amateur space effort and discussed Project OSCAR philosophy with regard to the effort. It is the belief of the founders of Project OSCAR that amateur satellites should be available internationally to all interested parties and should not carry the designation of any country. The OSCAR group has therefore identified their satellites only with a simple "HI" and has discouraged the use of particular prefixes or identifiers. Bill discussed the difference between the OSCAR organization and the OSCAR philosophy. The OSCAR organization, like all organizations, will probably have a finite lifetime. It is subject to normal organizational ups and downs as membership changes. The OSCAR philosophy, on the other hand, is a general statement of basic policy, which should serve as a guide to any organizations which may become involved in the amateur space effort.

In terms of long range plans, Bill discussed the 1971 WAR Conference. He considers it important for us to work with our national organizations far in advance of the conference so that we can present a united front. We must decide what frequencies are most desirable for amateur space applications

and be prepared to make our case for exclusive occupancy. Bill believes it possible to achieve amateur-only use of frequencies above two meters if the case is made and presented properly.

Bill's remarks were brief, timely, to the point and enjoyed by all present. It is our hope that his presentation will be only the first step in a series of exchanges which will benefit the entire effort. As Bill suggested, Perry has appointed a committee which will work in parallel with Project OSCAR as advisor to the ARRL in preparation for the 1971 conference. We are of course maintaining contact with Bill and his group via 15 meter SSB.

Due to circumstances over which neither AMSAT nor I have any control, this is both my first and my last report to the general membership. I will continue to act as primary sked station in the Washington area for as long as possible and will make myself available for whatever advice and counsel I may offer AMSAT. My replacement as Corporate Secretary will be Chuck Dorian, W3JPT, an amateur of excellent repute and great capability. I would like to wish Chuck the best and request the general membership to show him the cooperation which it has shown me.

Jim Puglise
W3CBJ

AMSAT - A New Amateur Satellite Program

by "Cap" Petry, W3AWN, Vice President - Operations_

The Radio Amateur Satellite Corporation (AMSAT) is a nonprofit scientific and educational organization set up to provide satellites for experimentation and communication by radio amateurs throughout the world. The new organization hopes to tap the vast East Coast reservoir of scientific and technical talent existing among amateurs, many of whom are professionally associated with advanced communications and space programs. AMSAT has the support of Project Oscar and hopes to engage in activities jointly with that group.

The AMSAT organization plans to design, build and launch communications satellites to operate in the VHF and UHF amateur bands. It intends to encourage and sponsor supporting activities and related experimentation by interested individuals and groups. Projects undertaken by local radio clubs may, for example, include design and Construction of satellite ground stations for command, monitoring, and tracking, as well as two-way communication. Or a local group may volunteer to build and test an important spacecraft subsystem, such as a command receiver. Another organization may provide computing facilities for determining orbital parameters. AMSAT's programs will be designed to offer a sufficient scope of activities for almost every individual amateur and group of amateurs.

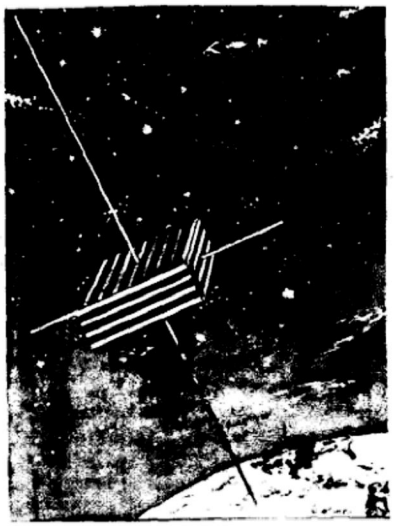
The first AMSAT undertaking le the launching of Australis-OSCAR A. After its launch, this satellite will be known as Australis-OSCAR V. This activity is being conducted in Co-operation with Project Oscar and Project Australis. The satellite was built by a group of Australian amateurs and sent to Project Oscar for launch in 1961. Plans called for

launching in 1968, but the launch was indefinitely delayed. AMSAT has been discussing with NASA the possibility of launching the satellite as piggyback on a suitable NASA mission which, it is hoped, will achieve a medium altitude circular polar orbit. The satellite is a 35-pound, battery- powered, magnetically-stabilized spacecraft which will transmit "HI" each minute, on 2 and 10 meters, for an expected life of over two months. It will be the first amateur satellite capable of telemetering several information parameters from space and also the first amateur satellite to employ any form of stabilization.

In addition to the Australis-OSCAR activities, effort is being directed by AMSAT toward development and launch of advanced amateur communications satellites, including spacecraft capable of supporting two-way communication for a period of several years. Power will be provided by solar cells or a nuclear isotope power system. Placed in a near- synchronous orbit, the satellite's position will gradually shift so that antenna pointing will require changing at infrequent intervals. At the same time, the satellite will be available to virtually every populated part of the earth in the course of a week or two. Line of sight communication will be possible from the satellite to nearly one-third of the earth's surface at any one time. The availability of such a semi-permanent communications facility should provide sufficient incentive and justification for many amateurs the world over to make the necessary preparations to use the spacecraft repeater.

The AMSAT group is also assessing the availability and means of obtaining surplus hardware from now completed space projects with the objective of adapting usable subsystems and components for amateur satellite use. Specific tasks, aimed at getting preliminary design information, have been assigned to the various clubs and group which form the nucleus of AMSAT.

Direct participation in AMSAT's programs by all interested radio amateurs is invited. Membership is open internationally to individuals and to clubs or groups having a desire to support AMSAT's objectives through contributions of time, services, equipment, or financial support. It is not intended that geographic location be a bar to membership. On the contrary, it is hoped that AMSAT members will soon be found throughout the U.S. and the rest of the world.



An Artist's Rendition of the Australis-OSCAR A Satellite (reprinted from QST, July 1969).

PROGRESS REPORT ON
AUSTRALIS-OSCAR A

by Jan King, K8VTR,
Project Manager

The Australis-OSCAR A package (A-0-A) arrived at AMSAT on April 14 of this year and is scheduled to undergo a number of environmental and functional tests in preparation for a possible launch on a Thrust Augmented Delta launch vehicle. To date, a number of tests have been completed on A-0-A by AMSAT members of the Goddard Space Flight Center. They may be listed in the order in which they were performed:

RFI TEST - With all systems in their normal operating mode, the spacecraft was tested for all R. F. emissions from 10 kHz to 1 GHz. Measurements were made in a heavily shielded enclosure using an accurately calibrated automatic sweeping receiver. During this test it was found that while all transmitter harmonics and subharmonics were at least 30 dB down, many of these emissions were still above the stringent NASA specification level. Subsequently, filters were designed and fabricated by AMSAT members to further reduce the harmonic content of the transmitter outputs.

TELEMETRY SENSOR CALIBRATION - All seven channels of the telemetry system have been calibrated under simulated flight conditions. Calibration curves have been prepared for voltage, current, and temperature measurements as well as determination of the dark current for the three orthogonally oriented earth sensors. Considerable care has been taken to determine how a given changing parameter may affect the telemetered value of others (e.g. how does a change in battery voltage affect the telemetered temperature measurements?).

SUBSYSTEM THERMAL-VACUUM TEST - Each subsystem of the satellite was placed in a thermal vacuum chamber where both temperature and pressure can be accurately controlled to simulate a space-like thermal environment. The test was run over a three-day period. 24-hour temperature "soaks" were conducted at 25, 10, and 40 deg. C. The pressure during this period was always less than 5×10^{-6} mm. of Hg. Difficulty occurred during this test with the command receiver. As the pressure in the chamber was reduced, the receiver audio output during command become greatly distorted. It was determined that the first I.F. stage was being detuned during the vacuum condition. The problem could be corrected by a slight detuning of the IF transformer. The exact cause of this malfunction is not fully understood, and the problem is still being worked on. No other problems were encountered during thermal vacuum testing.

At the present time the condition of the transmitters and receiver are as follows:

VHF (2 M) XMTR: Power output to antenna: 40 mW
All Harmonics: -50 dB

HF (10 M) XMTR: Power output to antenna: 180 mW

COMMAND RCVR: Sensitivity: 1 microvolt
Bandwidth: 8 kHz at -6 dB

ORIENTATION KIT

Many members and Officers of AMSAT have received enquiries about the purposes and activities of AMSAT. In addition, many new members are interested in learning about their organization's "history" and having a handy source of reference material. It is to meet these needs that we have prepared the Orientation Kit that appears below.

I. PURPOSES OF AMSAT AND GENERAL INFORMATION

The Radio Amateur Satellite Corp. is a non-profit scientific corporation founded in the greater Washington, D.C. area. The purposes and objectives of the Corporation include:

A. Providing satellites that can be used for amateur radio communication and to conduct experiments by suitably equipped amateur radio stations throughout the world on a non-discriminatory basis.

B. Encouraging development of skills and the advancement of specialized knowledge in the art and practice of amateur radio communications and space science.

C. Fostering international goodwill and cooperation through joint experimentation and study, and through the wide participation in these activities on a noncommercial basis by radio amateurs of the world.

D. Facilitating communications by amateur satellites in times of emergency.

E. Encouraging the more effective and expanded use of the higher frequency amateur bands.

F. Disseminating scientific and technical information derived from such communications and experimentation, **and** encouraging publication of this information in treatises, theses, technical journals or other public means.

Membership in AMSAT is open to all radio amateurs and other interested persons. AMSAT encourages the participation of all interested individuals in its activities regardless of membership and invites licensed amateur radio operators of all countries to engage in radio transmissions to the satellite(s). Membership is possible in two categories:

A. An interested individual may become a Member by filling out and returning the membership application, along with his dues payment.

B. A recognized group or organization interested in supporting the goals and objectives of the corporation and wishing to participate constructively in its activities may become a Member Club by filling out and returning a Member Club application together with their dues payment. A Member Club may nominate two Members annually as candidates to the Board of Directors of the Corporation. Member Clubs are encouraged to accept project assignments within their area of interest.

II. ORGANIZATION AND BOARD OF DIRECTORS

The idea of AMSAT was born during a meeting of the COMSAT amateur Radio Club on January 9, 1969, featuring George Jacobs, W3ASK as the speaker on Project OSCAR. George urged the Club to help form an East Coast group to pick up where the West Coast group had left off. Perry Klein, President of the COMSAT Club, discussed the idea with several other Clubs in the area, and found a very enthusiastic response.

The Articles of Incorporation were, signed on February 27, 1969 by five Incorporators, namely (in alphabetic order): George V. Kinal, Jan A. King, Perry I. Klein, C. A. Petry, and James D. Puglise. The Corporation was officially incorporated on March 3, 1969.

The Incorporators also serve as the interim Board of Directors, pending the election of the first regular Board in November this year.

The current officers of AMSAT and their special responsibilities are listed below:

President - Perry Klein, K3JTE. Chief Executive Officer.
Executive Vice President - Jan King, K8VTR. General coordination; Project Australis-OSCAR.
Vice President, Engineering - George Kinal, K2MBU. Management of technical activities.
Vice President, Operations - C. A. Petry, W3AWN. Internal administrative functions; data acquisition.
Secretary - Charles Dorian, W3JPT. Communications and records.
Treasurer - Dick Mostow, W3YAV. Finances; membership.

The first Secretary of AMSAT was Jim Puglise, W3CBJ, who was one of the Incorporators and a member of the Board. Jim resigned from the Secretary's office in June because of other demands on his time.

III. SUMMARY OF BYLAWS

Articles I and II describe the name and purposes of the organization and Article III deals with membership rules and dues. This information has been given above. The membership dues are $5.00 per annum; additional members of the immediate family: $2.00. Annual dues for Member Clubs are $10.00 per Club.

Article IV concerns Elected Officers (Directors), Appointed Officers, and Committees. It specifies their mode of election or appointment, and defines their responsibilities. It provides for the appointment of Liaison Officers and Consultants, as deemed necessary. A list of such assignments is given later.

This Article also states that the interim Board of Directors shall serve till the first regular elections in November 1969. At that time, seven Directors shall be elected, four for a two-year term and three for a one-year term.

Article V concerns Meetings, and the rules for their conduct. It stipulates an Annual Meeting to be held in November for the election of Directors.

Article VI concerns Inventions and Patents, and acknowledges that a member's first obligation is to his employer.

Articles VII and VIII provide for the adoption and amendment of the Bylaws.

IV. MEETING SUMMARIES AND MILESTONES

Jan. 9, 1969 - George Jacobs addressed a meeting of the Comsat Amateur Radio Club at Comsat (L'Enfant Plaza). Topic: The Status of Project OSCAR. During this meeting, Jacobs suggested that the Comsat Amateur Radio Club help form an East Coast group to carry on the objectives of Project OSCAR.

Jan. 21, 1969 - A meeting at Perry Klein's apartment was attended by Denny Avers of the IBM Radio Club, George Kinal of the Communications & Systems Radio Club, Jim Puglise and Bill Tynan of the Applied Physics Lab. Radio Club, and Perry Klein of the Comsat Radio Club. Purpose: to discuss the interest of these clubs in a joint effort to organize an East Coast amateur satellite organization. It was concluded that interest was sufficiently great that the idea should be pursued further, and it was decided to form a non-profit corporation in order to disassociate the group's activities from any of the companies with whom the members were employed.

Jan. 31, 1969 - By this time a draft "Charter of the Amateur Satellite Corporation" had been circulated among a number of radio clubs in the Washington area and a meeting was held between Perry Klein and members of the NASA Goddard Space Flight Center Radio Club (Jan King, Frank Briden and Seth Williams). These club members indicated their interest in supporting the planned organization.

Feb. 6, 1969 - The first large organizational meeting was held at Comsat (L'Enfant Plaza) and attended by nearly two dozen interested amateurs. George Jacobs repeated his recommendation that an East Coast amateur satellite group be established in the Washington area. A preliminary application for membership in the "Amateur Satellite Corporation" was distributed. Five members of an interim Board of Directors were appointed (Jim Puglise of APL, George Kinal of C&S, Cap Petry of ARINC, Jan King of NASA-GSFC, and Perry Klein of Comsat). The interim Board was to accomplish the organizational and operational functions of the group until a regularly elected Board could be chosen by a general membership. The interim Board agreed to prepare and file articles of incorporation as a non-profit scientific corporation of the District of Columbia.

Feb. 13, 1969 - The first Board of Directors meeting took place at the Applied Physics Laboratory in Silver Spring. Purpose: to draft the articles of incorporation. It was decided to call the organization the Radio Amateur Satellite Corporation(AMSAT). After five hours of discussion, a first draft of the articles of incorporation was agreed upon.

Feb. 20, 1969 - The second general organizational meeting was held at the NASA-GSFC to discuss the articles of incorporation,
which had been circulated to the group beforehand. These were approved, with a few changes. It was decided to seek affiliation with the American Radio Relay League, and to proceed with the preparation of the bylaws as soon as possible.

Feb. 27, 1969 - A second meeting of the Board of Directors was held at APL in Silver Spring. The Articles of Incorporation, which by this time were in final form, were signed by the Board of Directors and notarized. Discussion began on a draft of the bylaws.

March 3, 1969 - The Radio Amateur Satellite Corporation became officially incorporated as a non-profit scientific corporation of the District of Columbia.

March 6, 1969 - The third general meeting was held at IBM in Gaithersburg, Md. The meeting was mainly a technical progress report and discussion of amateur satellite nuclear power sources, gravity gradient stabilization, and launch vehicle possibilities.

March 8, 1969 - Cap Petry addressed the Washington Section of the Quarter Century Wireless Association at their annual banquet. Topic: the newly formed Radio Amateur Satellite Corporation. Along with brief announcements in April QST and Autocall, these were the first public announcements of AMSAT's formation.

March 15, 1969 - A third meeting of the Board of Directors was held at Jim Puglise's home to try to finalize the bylaws for the new corporation. The meeting lasted from 5PM to nearly 4AM! Officers were elected by the Board on an interim basis: Perry Klein as President, Jan King as Executive Vice President, George Kinal as Vice President - Engineering, Cap Petry as Vice President - Operations, Jim Puglise as Secretary, and Dick Mostow as Treasurer. The Board authorized the opening of a checking account, and dues were collected from the Board.

March 20, 1969 - The fourth general AMSAT meeting was held at Comsat (L'Enfant Plaza). A brief progress report on the bylaws and new membership application form was given and dues were collected from the general membership for the first time. It was announced that the Board of Directors of Project OSCAR had agreed to send the Australis-OSCAR If satellite to AMSAT for testing and preparation for a Delta launch, pending agreement by Project Australis. Harry Helfrich and Jan King were given the responsibility of planning tests of the satellite at the NASA Goddard Space Flight Center.

April 10, 1969 - The fifth general AMSAT meeting was held at Comsat. At this meeting the drafted bylaws, which had been distributed prior to the meeting, were discussed and it was concluded that further revisions would be required. The AMSAT Logo (emblem) was approved.

April 13, 1969 - A Board of Directors meeting was called to discuss the conditions under which Project OSCAR was turning over the Australis-OSCAR A satellite to AMSAT.

April 14, 1969 - The Australis-OSCAR A satellite was hand-carried to Aeronautical Radio Inc. at Annapolis, Md., from the West Coast and delivered to Cap Petry.

April 24, 1969 - An AMSAT meeting was held at NASA-GSFC. The Australis-OSCAR A satellite was brought to Goddard, opened, and inspected. Dave Collins, K2LME showed slides of the East Coast VHF Society's station set up for OSCARs III and IV. The meeting concluded with a tour of the Goddard satellite testing facilities.

April 26, 1969 - Cap Petry addressed the Dayton Hamvention on the subject of AMSAT.

April 26, 1969 - A Board of Directors meeting was held at Perry Klein's apartment to finalize the bylaws. The task was not completed and another meeting was called for April 29.

April 29, 1969 - Another Board of Directors meeting was held at Jim Puglise's home to complete the bylaws. The bylaws were put into final form for approval by the AMSAT membership.

May 8, 1969 - A general AMSAT meeting was held at Comsat to approve the bylaws. After some discussion and several changes, the bylaws were officially approved by the membership. A technical progress report on Australis-OSCAR A was given by the AMSAT members involved in the test program. It was announced that Jan King, K8VTR, had been designated AMSAT's Australis-OSCAR A Project Manager, with responsibility for all activity and decisions involving the satellite hardware.

May 27, 1969 - Bill Orr, W6SAI, President of Project OSCAR addressed the AMSAT members at a general meeting held at the NASA Goddard Space Flight Center.* Jan King presented a progress report on the Australis-OSCAR A satellite test program, and the members were shown the test facility and the satellite subsystems. Bill Dunkerley, WA2INB, AMSAT's ARRL Coordinator, was sent down from ARRL Headquarters and said a few words on behalf of League Headquarters. A committee was appointed to recommend to ARRL a U.S. Amateur position for the 1971 Space World Administrative Radio Conference, and Don Jansky of the Office of Telecommunications Management was designated chairman.

June 19, 1969 - A meeting of the Board of Directors was held at Comsat to discuss the AMSAT newsletter, elect a new Secretary to replace Jim Puglise who plans to leave the Washington area, and augment the interim Board to its full strength of seven members. Sajjad Durrani was designated as Newsletter Editor and funds were appropriated for the first issue. Charles Dorian, W3JPT, was elected as Secretary, and he and William Tynan, W3KMV, were elected as additional members of the interim Board.

Typical Board Meeting

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* See page 4 for the Secretary's summary of Bill Orr's talk.

V. AMSAT OFFICERS, LIAISONS AND CONSULTANTS

President	Perry I. Klein K3JTE	Comsat Corp.
Exec. Vice Pres., and A-0-A Project Manager	Jan King K8VTR	NASA-GSFC
Vice President Engineering	George Kinal K2MBU	Communications & Systems, Inc.
Vice President Operations	C.A. (Cap) Petry W3AWN	Aeronautical Radio, Incorporated
Secretary	Charles Dorian W3JPT	U.S. Department of Transportation
Treasurer, Membership Chairman, Printing & Mailings	Richard W. Mostow W3YAV	Forecast FM Magazine
Public Relations and Press Releases	William A. Tynan W3KMV	Applied Physics Lab., Johns Hopkins Univ.
Editor Newsletter	Sajjad H. Durrani	Comsat Labs.
ARRL Hdq. Liaison	Foundation for Amateur Radio Liaison	Vic Clark W4KFC
ARRL Coordinator		William I. Dunkerley WA2INB
Project OSCAR Liaison		William I. Orr W6SAI
Project OSCAR Technical Liaison		M. Chas. Towns, Jr. K6LFH
Project Australis Liaison		Richard W. Tonkin
Project Australis Technical Liaison		Owen Mace
NASTAR Liaison		Nicholas K. Marshall W60L0/2
NASA Liaison		Jack Kelleher W4RAE
NASA-GSFC Liaison		Harry D. Helfrich W3DWF
FCC Liaison		William Grenfell W4GF
Office of Telecommunications Mgmt. Liaison		Donald Jansky
State Department Liaison, and Legal		Robert Booth, Jr. W3PS/K4PS
U.S. Govt. Consultant CQ Magazine and VOA		George Jacobs W3ASK

Coast Guard E.E. Lab.

ARRL Headquarters

EIMAC, Menlo Park,
California

Lockheed Aircraft Corp.
Saratoga, California

Melbourne, Australia

Melbourne, Australia

Syosset, Long Island,
New York

NASA Headquarters

NASA-GSFC

FCC

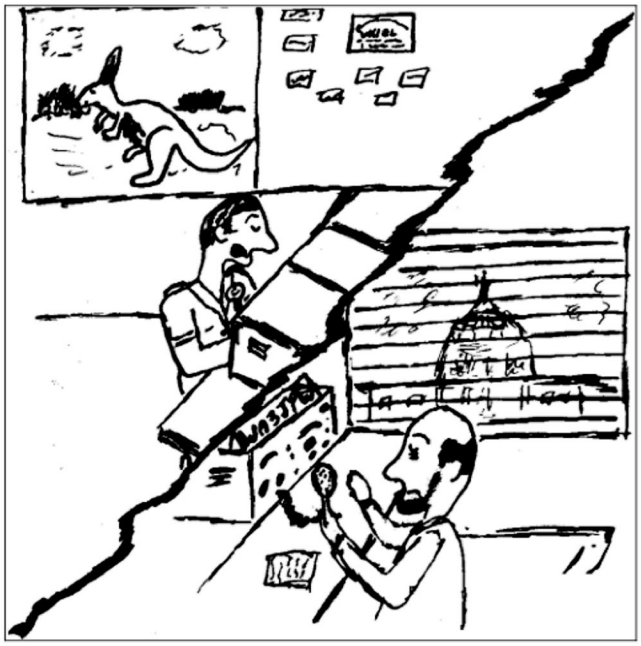
OTM

ARRL General Counsel

U.S. Information
Agency

NASA-GSFC

Financial Consultant	Raphael Soifer K2QBW	Hartsdale, New York
International Co-ordination	E. Jan Moulton K2EUL	New York City
AMSAT Printer	Vernon (Skip) Stickley, Jr. WA3KLH	Washington, D.C.
Sked Stations		
	James D. Puglise W3CBJ	SSB all bands
	M. Joseph Gatti W4TRJ	SSB all bands. RTTY under construction
	Charles Roettcher K3FLS	SSB, RTTY under construction
	H. H. (Robby) Robinson W3RE	SSB all bands
	C. A. (Cap) Petry W3AWN	SSB/CW all bands
	Perry Klein K3JTE	CW, 40 meters



Early Morning Sked With Australis

AMSAT Member Clubs: Task Assignments

Radio Amateur Club of:	Task
Applied Physics Lab	Gravity gradient stabilization feasibility study (Coordinator: Bill Tynan),
NASA Goddard	Two-meter satellite repeater feasibility studies (Coordinator: Bob Maples)
	Satellite VHF antennas (Coordinator: Gary Hendrickson)
	NASA launch vehicle interfacing (Coordinator: Jan King)
	Australis-OSCAR A satellite testing (Coordinator: Jan King)
ARINC	Satellite access and operating procedures (Coordinator: Cap Petry)
	Frequency selection (Coordinator: Cap Petry)
Communications & Systems	Air Force launch vehicle interfacing (Coordinator: George Kinal)
Telcom	Diplexer feasibility study' Coordinator: Joe Mitchell)
Comsat	Surplus space hardware (Coordinator: Perry Klein)
	Launch vehicle piggyback space (Coordinator: Perry Klein)
	Proposal for AMSAT television experiment using ATS-G (Coordinator: Sajjad Durrani)

ANNOUNCEMENTS

ATTENTION - MEMBERS!

Please check your Address Label and the Activity Code shown in the first line of the label. The code has the following key:

A - member with an amateur license

B - member without an amateur license

C - a member of ARRL

D - not a member Of ARRL

E - interested in participating actively in AMSAT assignments

F - interested, but not in receiving an assignment

G - capable of participating in technical activities

H - capable of participating in non-technical (Administrative) activities.

If you have corrections to your address label, please mark the correction on the label and send it to AMSAT, P.O. Box 27, Washington, D.C. 20044.

ATTENTION - MEMBERS AND NON-MEMBERS

If you are interested in receiving information on the forthcoming Australis-OSCAR A launch, please fill and return the following coupon:

To Project OSCAR, Foothill College, 12345 El Monte Road, Los Altos Hills, California 94022

Please add my name to the new AMSAT/OSCAR mailing list for news on the forthcoming Australis amateur satellite

Name _____ Call _____

(Individual or

Street _____ **City** _____

State or Country _____ **Zip** _____ **Is this a new address? (yes) (no)**

_____